Ref. No. 3495

ONKYO SERVICE MANUAL

STEREO CASSETTE TAPE DECK

MODEL TA-RW111

Black model

BMD, BMDN	120V AC, 60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

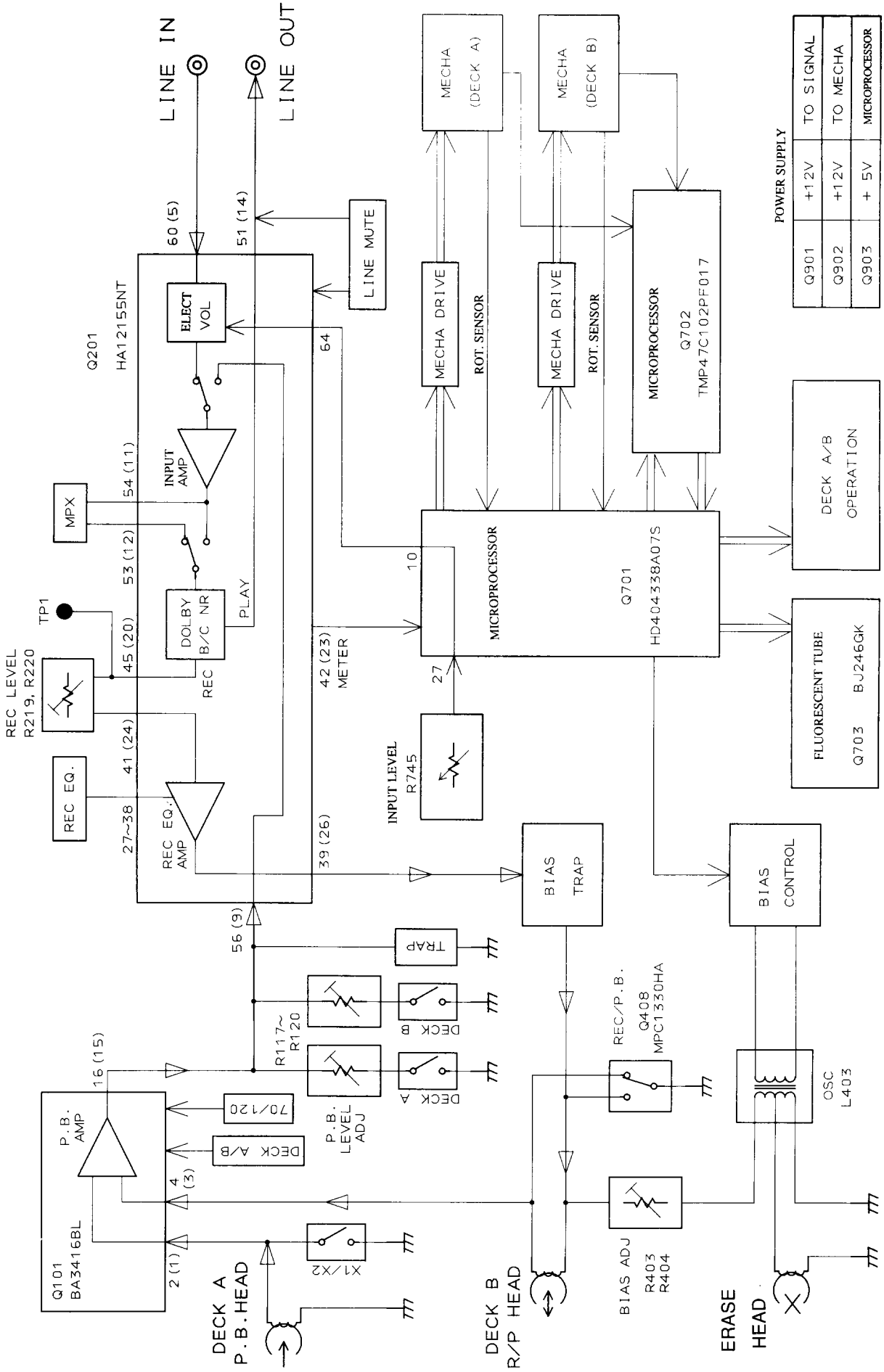
ONKYO®
AUDIO COMPONENTS

SPECIFICATIONS

Track Format:	4-track, 2-channels
Erasing System:	AC erase
Tape Speed:	4.8 cm/sec. (1-7/8 i.p.s.) 9.6 cm/sec. (3-3/4 i.p.s.) (high speed dubbing)
Wow and Flutter:	0.08% (WRMS)
Frequency Response:	20 - 15,000 Hz (Normal) (30 - 14,000 Hz ± 3 dB) 20 - 16,000Hz (High) (30 - 15,000Hz ± 3 dB) 20 - 17,000Hz (Metal) (30 - 16,000Hz ± 3 dB)
S/N Ratio:	Dolby NR off: 58dB (metal position tape) A noise reduction of 10dB above 5kHz and 5dB at 1kHz is possible with Dolby B NR. A noise reduction of 20dB at 5kHz is possible with Dolby C NR.
Input Jacks:	Line IN: 2 Input sensitivity: 80mV Input impedance: 50 kohms
Outputs:	Line OUT: 2 Standard output level: 500mV (0dB) Optimum load impedance: over 50 kohms
Motors:	DC servo motor × 2
Heads:	REC/PB: 1 PB: 1 ERASE: 1
Power Consumption:	17 watts
Dimensions:	455 (W) × 120 (H) × 305 (D)mm (17-15/16" × 4-3/4" × 12")
Mass:	5.2 kg. (11.5 lbs.)

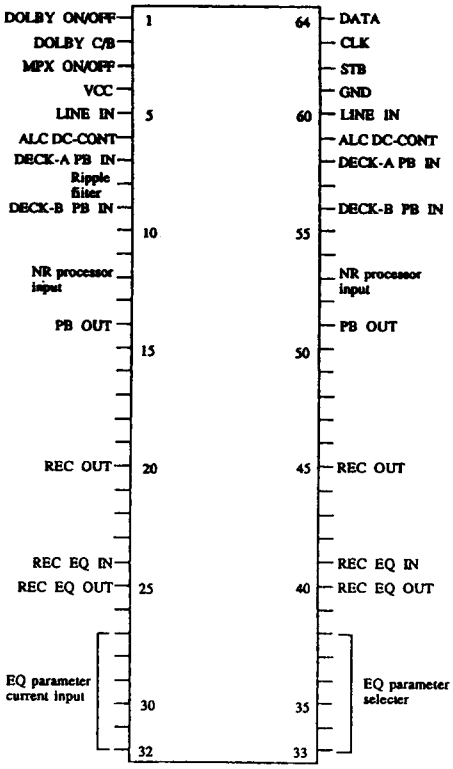
Specifications and external appearance are subject to change without notice because of product improvements.

BLOCK DIAGRAM

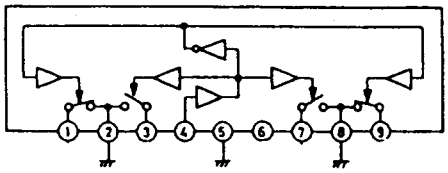


IC BLOCK DIAGRAMS

HA12155NT (DOLBY NR)



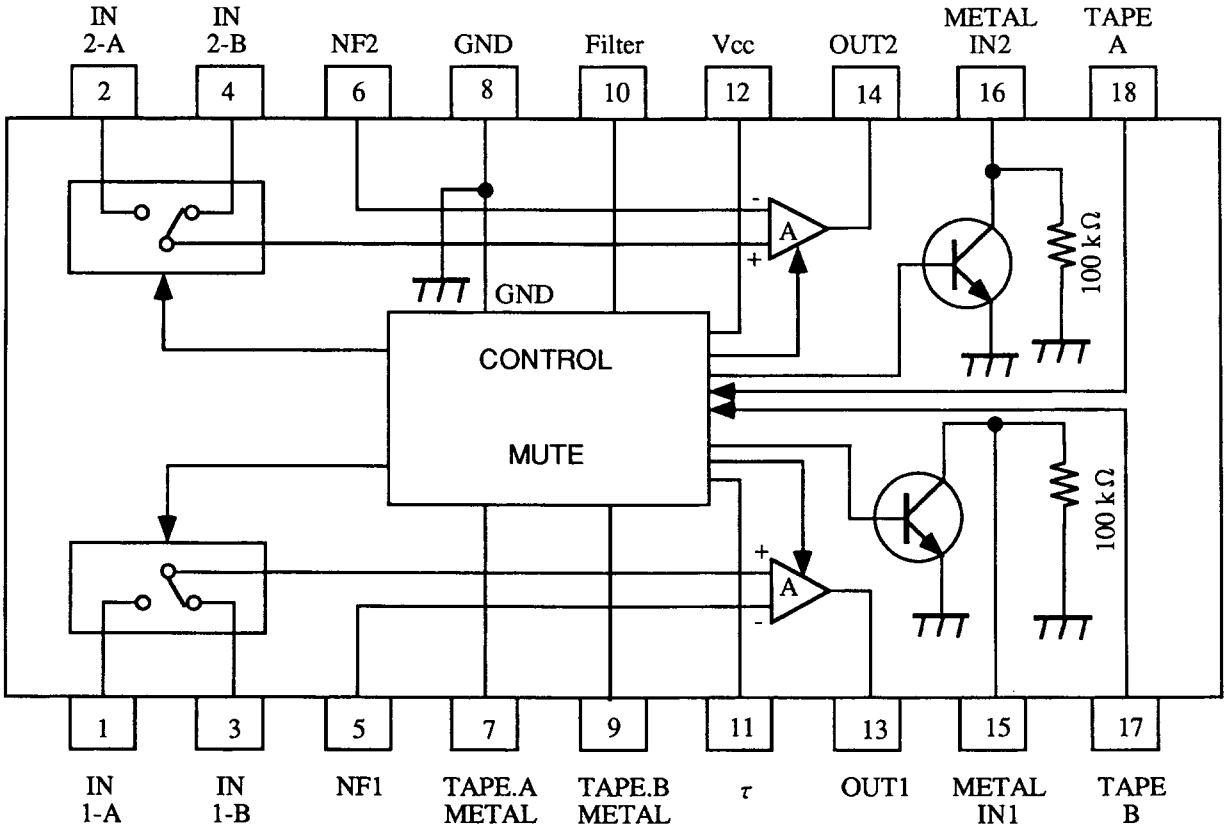
μPC1330HA (REC/PB SW)



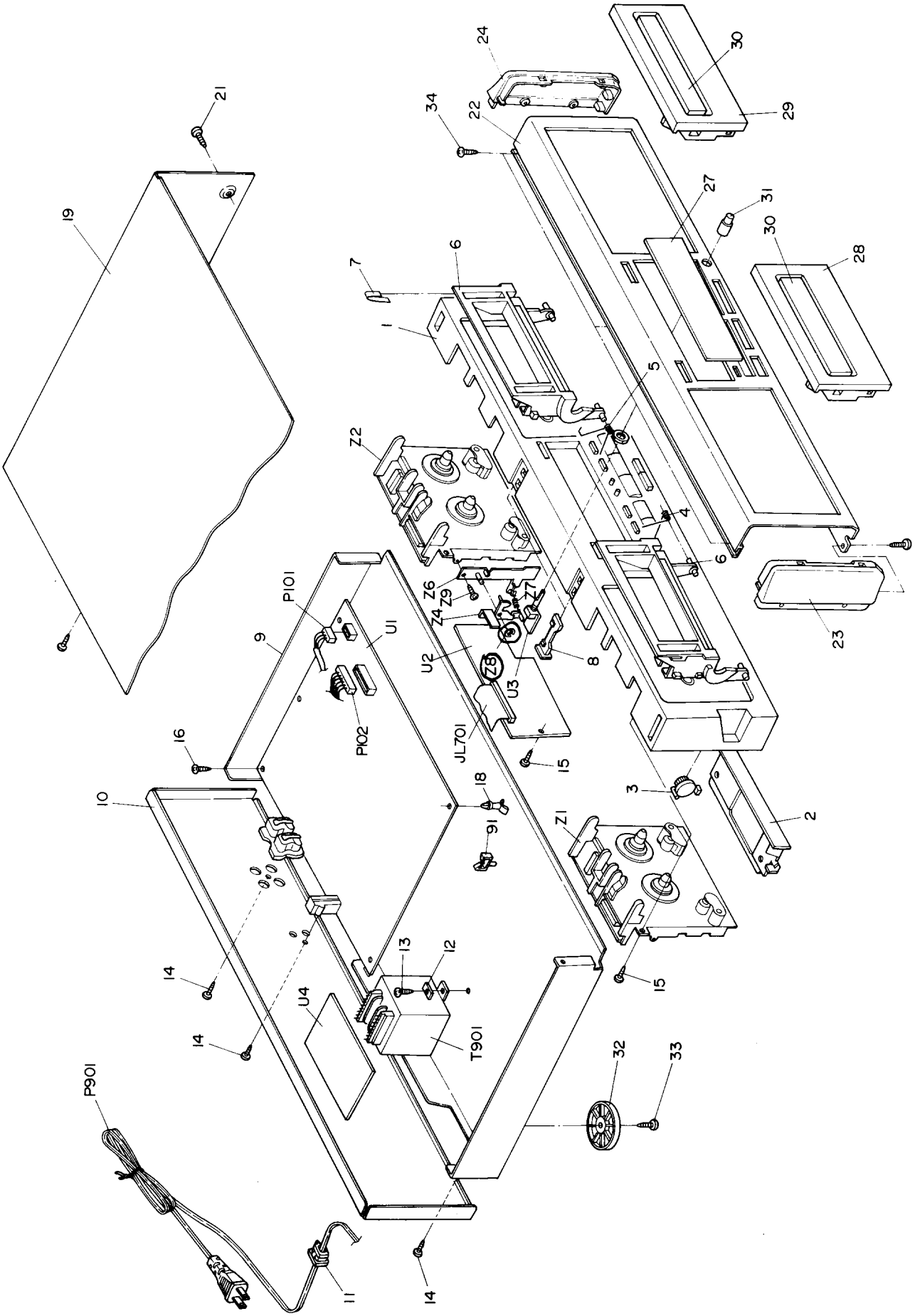
μPC1330HA

Pin No.	Function
1, 9	PB. signal
2	GND
3, 7	REC signal
4	REC/PB SW control
5	GND
6	+B
8	GND

BA3416BL (Dual Playback Preamplifier)



CHASSIS-EXPLODED VIEW



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	27110796Y	Front bracket
2	27262443	Plate T-1
3	28400282	Damper
4	27180476A	Spring B
5	27180477A	Spring A
6	27301792AY	Cassette frame
7	27180272A	Spring
8	28324943Y	Knob, eject
9	27100280AY	Chassis
10	27122007Y	Rear panel
11	27300750	⚠ Cord bushing
12	870065	Flat washer
13	830440089	4TTC+8C(BC), Self-tapping screw
14	838130088	3TTB+8B, Self-tapping screw
15	833430080	3TTP+8P(BC), Self-tapping screw
16	838130088	3TTB+8B, Self-tapping screw
17	835430068	3TTF+6B(BC), Self-tapping screw
18	27190480-1Y	PCB-8L,Holder
19	28184479AY	Top cover
21	838430088	3TTB+8B(BC), Self-tapping screw
22	1N211121Y	Front panel ass'y
23	28125248-6Y	End cap L
24	28125249-6Y	End cap R
25	28198802Y	Facet
26	28135199	Badge
27	28191676Y	Clear plate
28	27301853Y	Cassette lid A
29	27301853-1Y	Cassette lid B
30	28400625	Window
31	28324338	Knob, volume
32	27175292	Leg
33	838130088	3TTB+8B, Self-tapping screw
34	833430080	3TTP+8P(BC), Self-tapping screw
91	27300833	WS-2NS,Clamp
JL701	2047292512Y	NCFC7-292512,Flexible flat cord
P101	2009990312Y	NSAS-6P0446,Socket
P102	2009990313Y	NSAS-14P0447,Socket
P901	253192HIT	⚠ AS-UC-6 #18,Power supply cord
T901	2301008Y	⚠ NPT-1206D,Power transformer
U1	1N211576-3Y	NAAR-4976-3,Main circuit pc board ass'y
U2	1N211577-3Y	NADIS-4977-3,Display circuit pc board ass'y
U3	1N211578-3Y	NAAF-4978-3,Input volume pc board ass'y
U4	1N211579-3Y	NAPS-4979-3,Power supply pc board ass'y
Z1	244186	NDM-177,Deck mechanism A
Z2	244187AY	NDM-178,Deck mechanism B
Z3	24603402Y	Lever L, eject
Z4	24603404Y	Lever R, eject
Z5	24611591Y	Retainer L
Z6	24611593Y	Retainer R
Z7	24605798Y	Spring
Z8	8930301S	Ring E
Z9	833126047	2.6TTP+4S,Self-tapping screw

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

ADJUSTMENT PROCEDURES

PRECAUTIONS

1. ***Before adjustment, clean the following parts with an alchol moistend swab.***
   - ***record/playback head**
   - ***erase head**
   - ***pinch roller**
   - ***capstan**
2. ***Do not use magnetized screwdriver for adjustments.***
3. ***Demagnetize record/playback head with a liead demagnetizer.***

TEST EQUIPMENT/TOOLS REQUIRED:

Audio oscillator
Digital frequency counter
Oscilloscope
Attenuator
AC voltmeter
Non-magnetic screwdriver
Test tapes
TCC-153 ***:10kHz, −15dB***
MTT-111 ***:3kHz, −10dB***
MTT-150 ***:Dolby level calibration 400Hz, tone 200nWb/m***

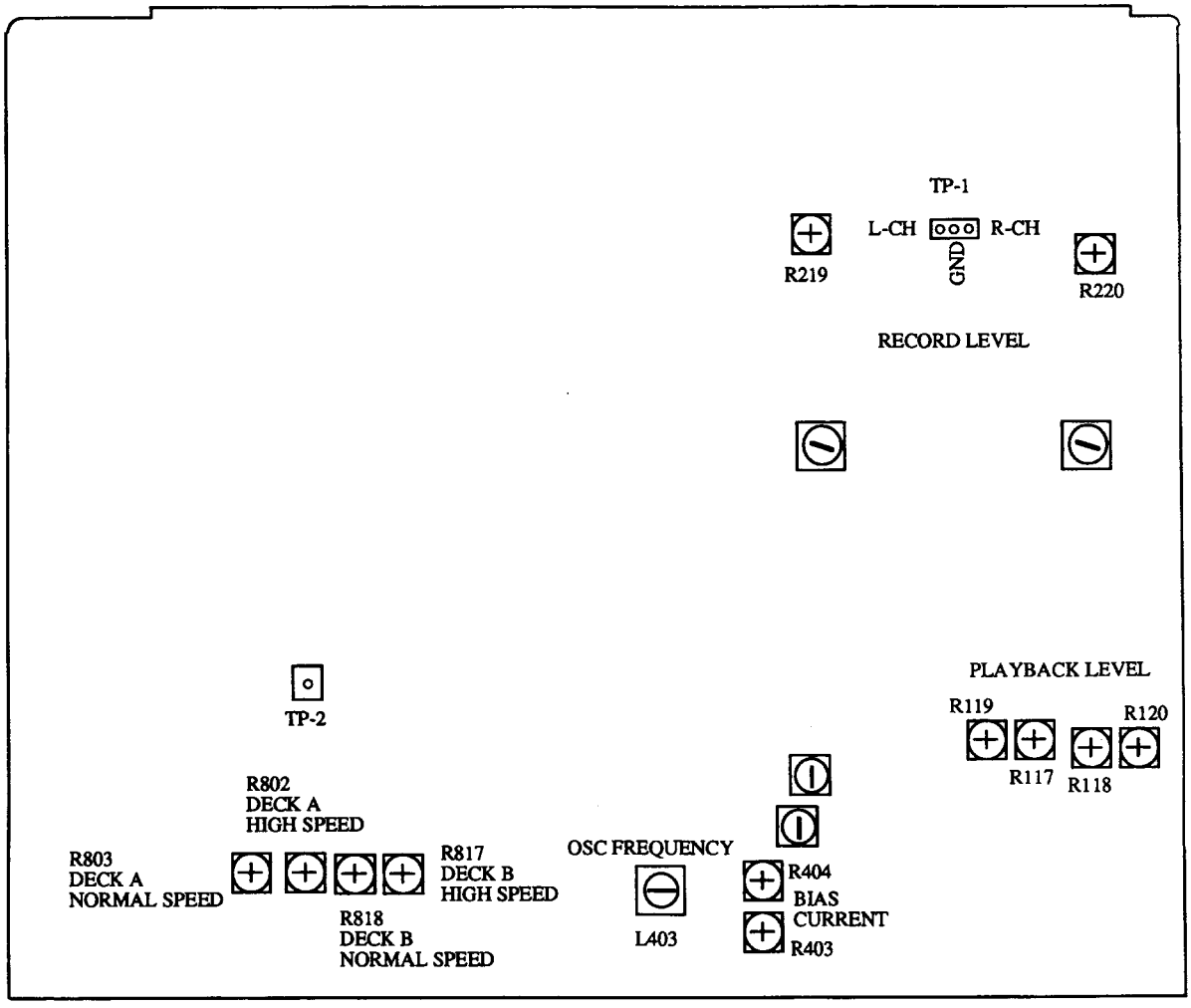
Tape speed adjustment

Connect the digital frequency counter to the line output terminal.
Load the test tape MTT-111 into the cassette holder.
Connect the test point TP-2 to the ground to be the unit to adjustment mode.
Press the forward play button. (The unit becomes the high speed.)
Adjust the trim resistors R802(Deck A) and R817(Deck B) so that the frequency counter reading becomes 6000Hz to 6020Hz.
Press the forward play button. (The unit becomes the normal speed.)
Adjust the trim resistors R803(Deck A) and R818(Deck B) so that the frequency counter reading becomes 3000Hz to 3010Hz.

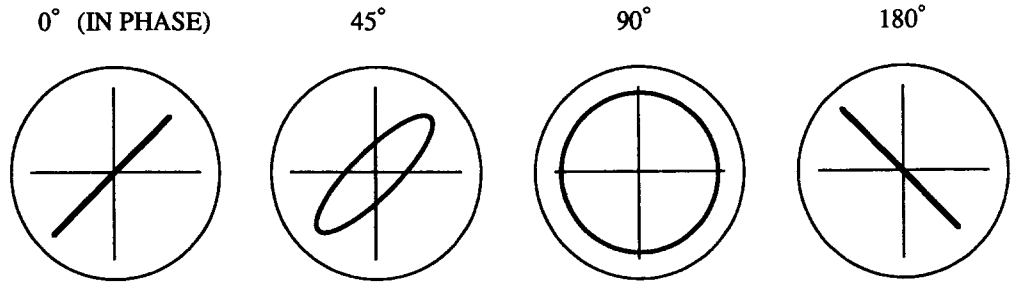
Item		Connection of instrument	Line input	Test tape	Mode	Output indicator	Adjustment point	Adjust	Remaks
1	Head azimuth	AC voltmeter and oscilloscope to LINE output terminal		TCC-153	PB	AC voltmeter Oscilloscope	Head azimuth acrew	Maximum and same phase at channels L and R	fig-1
2	Playback level	AC voltmeter to terminals TP1		MTT-150	PB	AC voltmeter	DECK A R117 (ch. L) R118 (ch. R) DECK B R119 (ch. L) R120 (ch. R)	300mV	
3	Bias frequency	Frequency counter to P102		METAL TAPE XS-C90	REC	Frequency counter	L403	85kHz±2kHz	
4	Bias current	fig-2	1kHz, −23dB and 12kHz, −23dB	UD-1 C-90	REC/PB	AC voltmeter	R403 (ch. L) R404 (ch. R)	Same level at 1kHz and 12kHz	Repeat the recording and play back until the 1kHz and 12kHz playback signals are same level.
5	Record level	fig-2	1kHz	UD-1 C-90	REC	AC voltmeter	Attenuator or AF OSC output	350mV	
					REC/PB	AC voltmeter	R219 (ch. L) R220 (ch. R)	Same level at REC/PB	

Blank tape NORMAL ·····UD-1 C-90
HIGH ·····XL-II C-90
METAL·····XS C-60

PLAY torque·····30~70g/cm
FF. REW torque·····80~180g/cm
Back tention ·····6~12g/cm



Adjustment point



Confirming phase relationship

Fig. 1

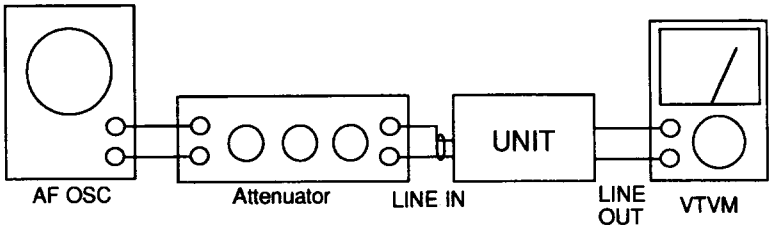


Fig. 2

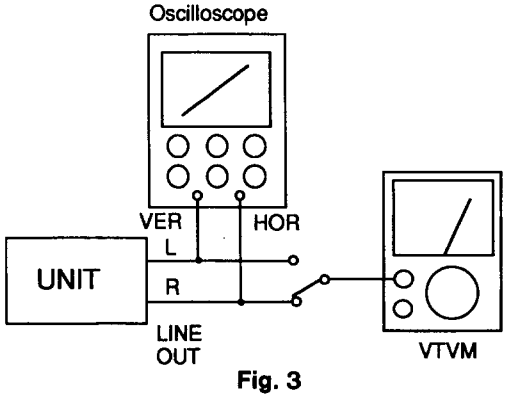
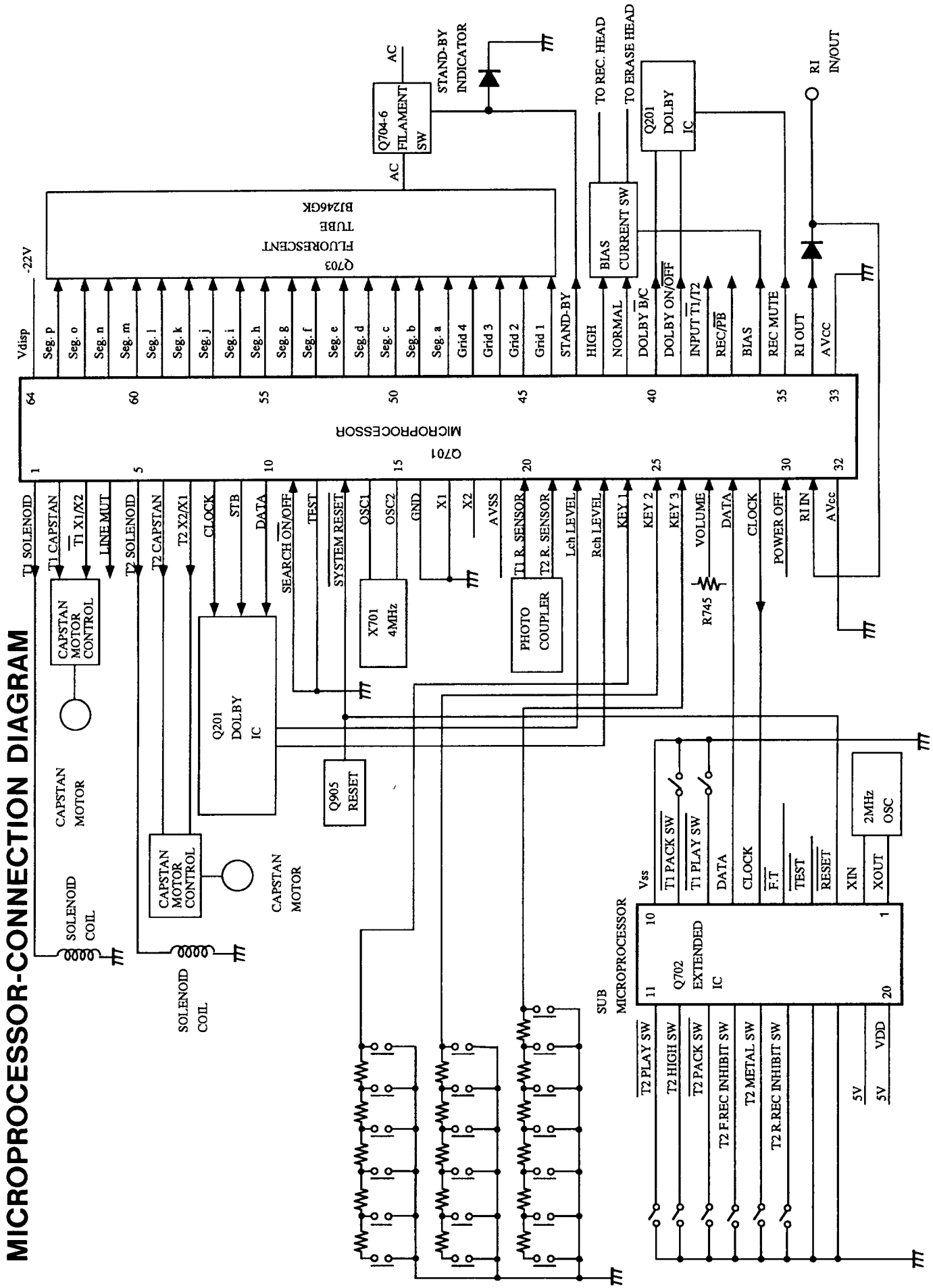


Fig. 3

MICROPROCESSOR-CONNECTION DIAGRAM



Pin No.	Function	Description	Remarks
1	T1 SOLENOID	Solenoid control output terminal	H
2	T1 CAPSTAN	Capstan motor control output terminal	H
3	T1 X1/$\overline{X2}$	Capstan motor rotation control output terminal	H:Normal speed L: Double speed
4	LINE MUTE	Muting control output terminal	H
5	T2 SOLENOID	Solenoid control output terminal	H
6	T2 CAPSTAN	Capstan motor control output terminal	H
7	T2 X1/$\overline{X2}$	Capstan motor rotation control output terminal	H:Normal speed L: Double speed
8	CLOCK	Serial transfer data output terminals with Doably IC	Clock output
9	STB		Strobe output
10	DATA		Data output
11	SEARCH $\overline{ON}$/OFF	Initializing terminal of skip operation	L
12	TEST	Test terminal	Connect to 5V.
13	$\overline{RESET}$	System reset terminal	L
14	OSC1	Clock input/output terminal to internal oscillator	
15	OSC2	Connect the 4 MHz ceramic resonator.	
16	GND	Ground terminal	
17	X1	Clock input/output terminals for resonator for timer	
18	X2	Not used.	
19	AVss	Power source terminal for A/D converter	Connect the ground.
20	T1 R. SENSOR	Signal input terminal from rotation sensor	
21	T2 R. SENSOR	Signal input terminal from rotation sensor	
22	L ch LEVEL	A/D input terminal for level input	
23	R ch LEVEL	Use the skip and indicator of level meter	
24	KEY 1	Operation key connection terminals	
25	KEY 2		
26	KEY 3		
27	VOLUME	A/D input terminal for volume position detection	
28	DATA	Transfer terminal with input extended microprocessor	Data input
29	CLOCK		Clock output
30	POWER OFF	Power stoppage detection input terminal	H
31	RI IN	System code input terminal	
32	AVcc	Power source terminal for A/D converter	
33	Vcc	Power source terminal	
34	RI OUT	System code output terminal	H
35	REC MUTE	Recording muting control output terminal	H
36	BIAS	Bias control output terminal	H
37	REC/PB	Recording/playback head selection terminal	
38	INPUT $\overline{T1}$/T2	Playback equalizer selection terminal	
39	DOLBY ON/$\overline{OFF}$	Dolby mode selection terminal	
40	DOLBY $\overline{B}$/C	Refer table 1.	
41	NORMAL	Playback equalizer and bias selector terminal	
42	HIGH	Refer table 2.	
43	STAND-BY LED	Stand-by indicator and filament control output terminal	H
44~47	Grid 4~Grid 1	Grid output terminals	H
48~63	Seg. a~Seg. p	Segment output terminals	H
64	Vdisp	Pull-down resistor connection terminals	

DOLBY ON/$\overline{OFF}$	DOLBY $\overline{B}$/C	DOLBY MODE
L	L	DOLBY OFF
L	H	DOLBY OFF
H	L	DOLBY B
H	H	DOLBY C

Table 1

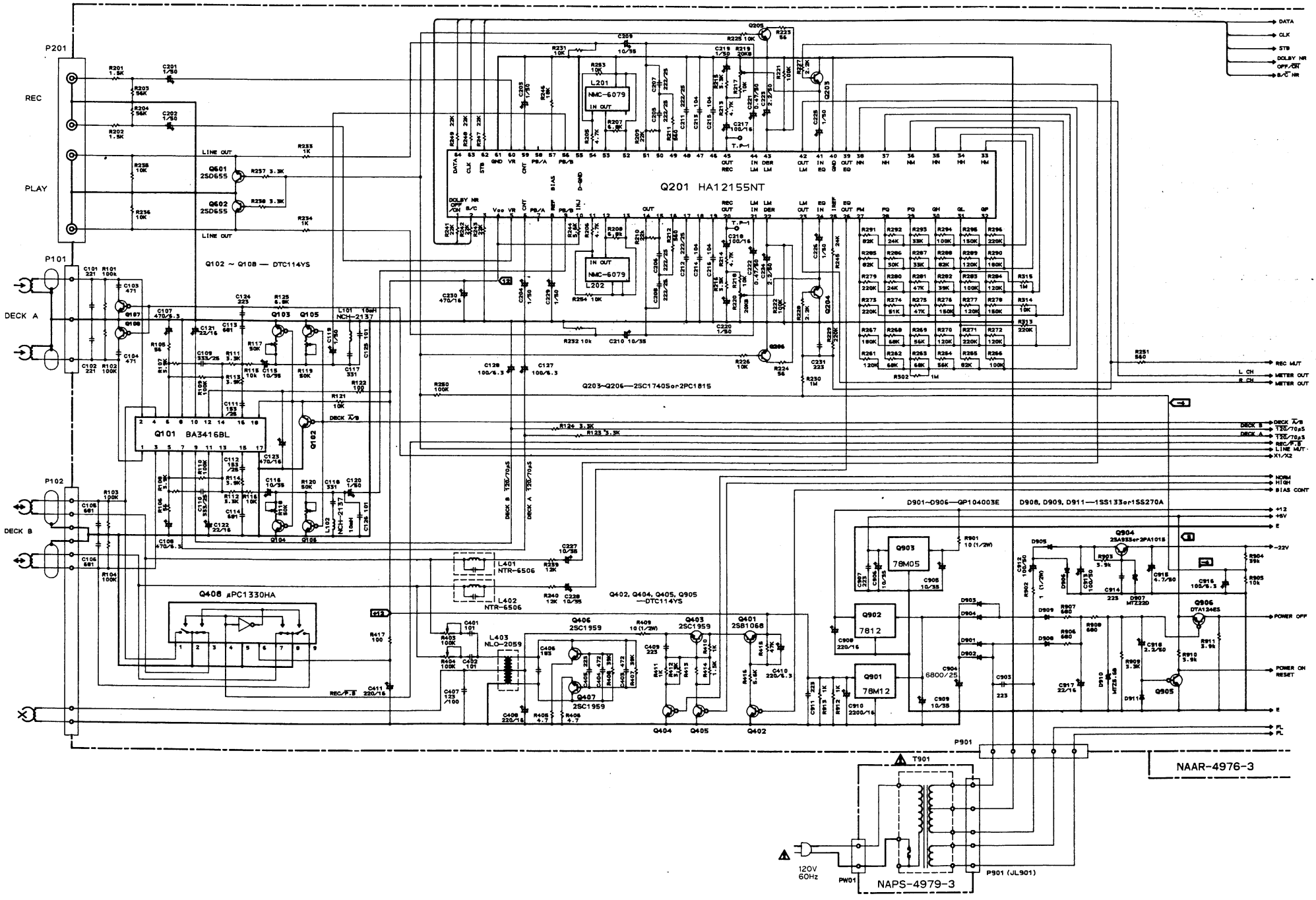
TAPE	NORMAL	HIGH
NORMAL	H	L
HIGH	L	H
METAL	L	L

Table 2

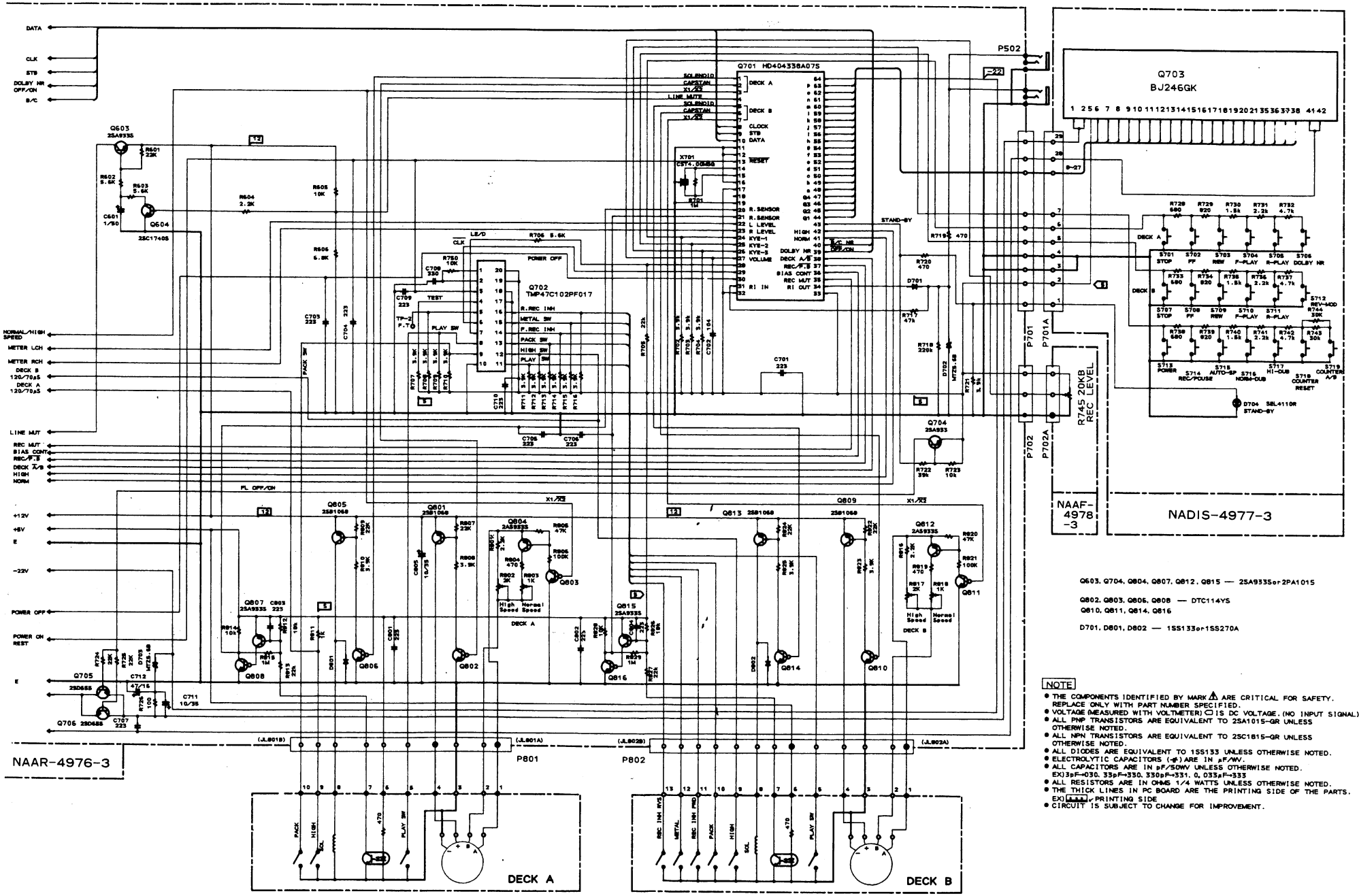
SUB MICROPROCESSOR

Pin No.	Function	Description
1	XOUT	Connect the 2 MHz ceramic resonator.
2	XIN	
3	$\overline{RESET}$	Reset input
4	$\overline{TEST}$	Test mode setting input of mechanism
5	$\overline{F.T}$	Setting input of adjustment
6	CLOCK	Clock input
7	DATA	Data output
8	T1 $\overline{PLAY}$ SW	Play switch input
9	T1 $\overline{PACK}$ SW	Switch input for detection of tape loading
10	Vss	Ground terminal
11	T2 $\overline{PLAY}$ SW	Play switch input
12	T2 HIGH SW	Switch input for detection of type of cassette tape
13	T2 $\overline{PACK}$ SW	Switch input for detection of tape loading
14	T2 F.REC INH SW	Recording prevention detection switch input of forward direction
15	T2 METAL SW	Switch input for detection of type of cassette tape
16	T2 R.REC INH SW	Recording prevention detection switch input of reverse direction
17	NC	
18	NC	

SCHEMATIC DIAGRAM



SCHEMATIC DIAGRAM



PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PC BOARD (NAAR-4976-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q101	22240767	BA3416BL
Q201	22240544	HA12155NT
Q408	22240147	μPC1330HA
Q701	22240765	HD404388A-07S
Q702	22240766	TMP47C102P-F017
Q901	222780125	78M12
Q902	222780120	7812
Q903	222780055	78M05
	Transistors	
Q102-Q108	221281	DTC114YS
Q203-Q206	2213285,	2SC1740S-S,
	2213284 or	2SC1740S-R or
	2214915	2PC1815-GR
Q401,Q801	2212853 or	2SB1068-K or
Q805	2212855	2SB1068-U
Q402	221281	DTC114YS
Q403	2211544	2SC1959-Y
Q404,Q405	221281	DTC114YS
Q406,Q407	2211544	2SC1959-Y
Q601,Q602	2211705 or	2SD655-E or
Q705,Q706	2211706	2SD655-F
Q603,Q704	2213355,	2SA933S-S,
Q804,Q807	2213354 or	2SA933S-R or
Q812,Q815	2214905	2PA1015-GR
Q604	2213285	2SC1740S-S
Q802,Q803	221281	DTC114YS
Q806,Q808	221281	DTC114YS
Q809,Q813	2212853 or	2SB1068-K or
	2212855	2SB1068-U
Q810,Q811	221281	DTC114YS
Q814,Q816	221281	DTC114YS
Q904	2213355,	2SA933S-S,
	2213354 or	2SA933S-R or
	2214905	2PA1015-GR
Q905	221281	DTC114YS
Q906	2212600	DTA124ES
	Diodes	
D701	223163 or	1SS133 or
D801,D802	223205	1SS270A
D702,D703	224450562	MTZ5.6B
D901-D906	22380035	GP104003E
D907	224452204	MTZ22D
D908,D909	223163 or	1SS133 or
D911	223205	1SS270A
D910	224450562	MTZ5.6B

CIRCUIT NO.	PART NO.	DESCRIPTION
	Coils	
L101,L102	231089	NCH-2137
L201,L202	233407	NMC-6079
L401,L402	231165	NTR-6506
L403	231215	NLO-2059
	Resonator	
X701	3010150	CST4.00MGW,Ceramic
	Capacitors	
C107,C108	354722219	220μF,6.3V,Elect.
C115,C116	354761009	10μF,35V,Elect.
C119,C120	354780109	1μF,50V,Elect.
C121,C917	354742209	22μF,16V,Elect.
C122	354761009	10μF,35V,Elect.
C123,C230	354744719	470μF,16V,Elect.
C127,C128	354721019	100μF,6.3V,Elect.
C201-C204	354780109	1μF,50V,Elect.
C209,C210	354761009	10μF,35V,Elect.
C213-C216	374721044	0.1μF±5%,50V,Plastic
C217,C218	354741019	100μF,16V,Elect.
C219,C220	354780109	1μF,50V,Elect.
C221,C222	354784799	0.47μF,50V,Elect.
C223,C224	354780229	2.2μF,50V,Elect.
C225,C226	354780109	1μF,50V,Elect.
C227,C228	354761009	10μF,35V,Elect.
C229,C601	354780109	1μF,50V,Elect.
C403,C404	374724724	4700pF±5%,50V,Plastic
C405	374722234	0.022μF±5%,50V,Plastic
C406	374721834	0.018μF±5%,50V,Plastic
C407	370131234	0.012μF±5%,100V,Plastic
C408,C411	354742219	220μF,16V,Elect.
C410	354722219	220μF,6.3V,Elect.
C702	374721044	0.1μF±5%,50V,Plastic
C711,C805	354761009	10μF,35V,Elect.
C712	354744709	47μF,16V,Elect.
C903,C911	374722734	0.027μF±5%,50V,Plastic
C904	3504210S	6800μF,25V,Elect.
C905,C906	354761009	10μF,35V,Elect.
C908	354742219	220μF,16V,Elect.
C909	354761009	10μF,35V,Elect.
C910	393342227	2200μF,16V,Elect.
C912,C913	354781019	100μF,50V,Elect.
C915	354780479	4.7μF,50V,Elect.
C916	354721019	100μF,6.3V,Elect.
C918	354780229	2.2μF,50V,Elect.

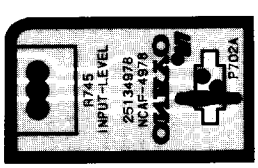
CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R117-R120	5210265	N06HR50KBC,Trim
R219,R220	5210263	N06HR20KBC,Trim
R403,R404	5210266	N06HR100KBC,Trim
R409,R901	443521004	10Ω,1/2W,Metal oxide
R802,R817	5210259	N06HR2KBC,Trim
R803,R818	5210258	N06HR1KBC,Trim
R902	453530104	1Ω,1/2W,Metal
	Plugs	
P101,TP1	25055133	NPLG-3P117
P102	25055138	NPLG-8P122
	Terminals	
P201	25045329	NPJ-4PDBL183,Output
P502	25045330	NPJ-2PDBL184,RI
	Socket	
P701	25050861	NSCT-29P656
	Wire holders	
P702	25051087	NSCT-3P874
P801	25051104	NSCT-10P891
P802	25051129	NSCT-13P916

DISPLAY CIRCUIT PC BOARD (NADIS-4977-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q703	212130	BJ246GK,FL tube
D704	225290	SEL4110R,LED
S701-S719	25035652	NPS-111-S604,Switches
P701A	25050893	NSCT-29P688,Socket
	27190939Y	Holder FL

INPUT VOLUME PC BOARD (NAAF-4978-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
R745	5104337Y	N09RL20KB15,Variable resistor
P702a	25051087	NSCT-3P874,Wire holder



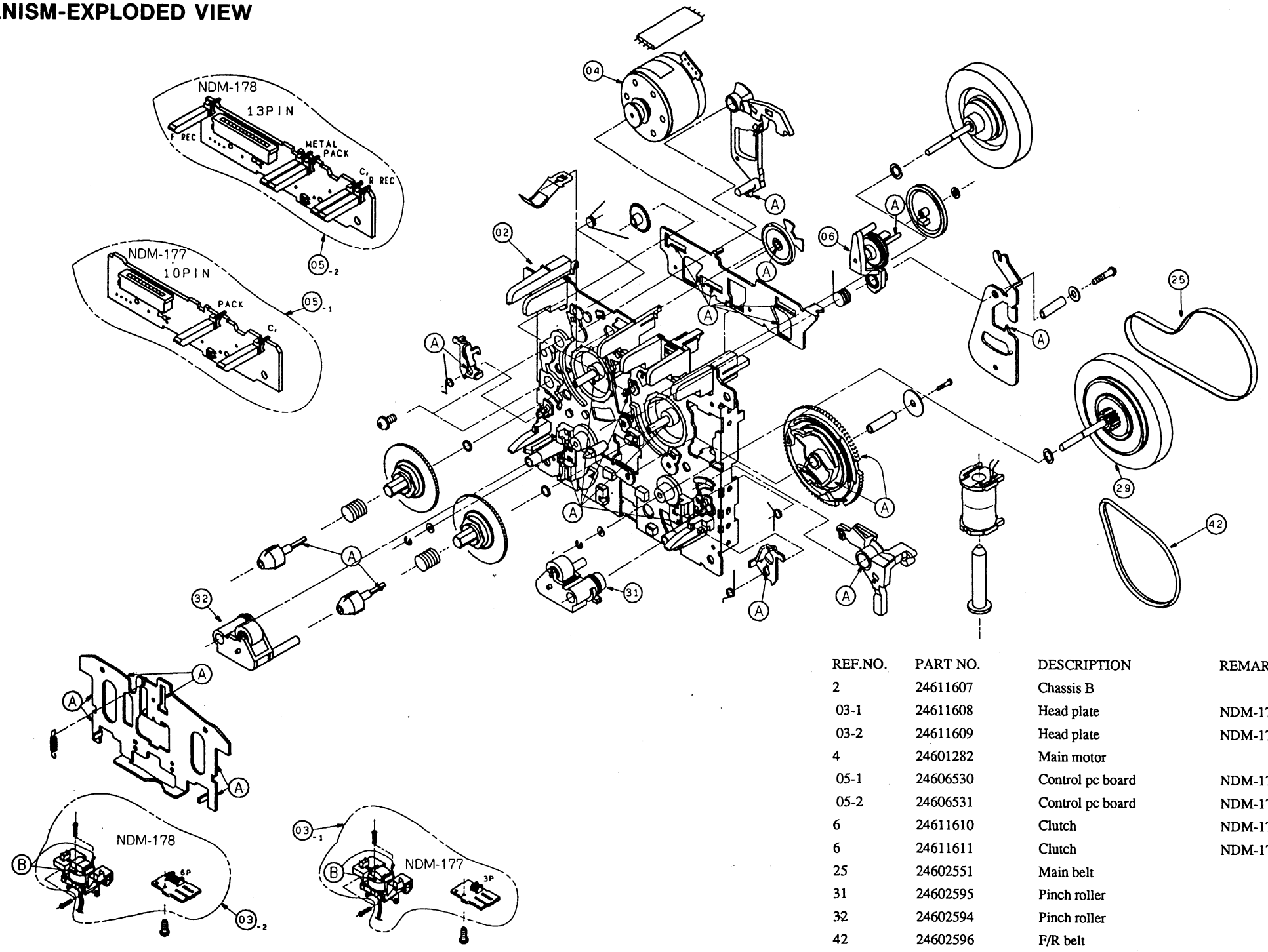
INPUT VOLUME PC BOARD

POWER SUPPLY PC BOARD (NAPS-4979-3)

CIRCUIT NO.	PART NO.	DESCRIPTION
P901	25051109	NSCT-5P896,Wire holder
PW01	25055676	NPLG-2P632,Plug

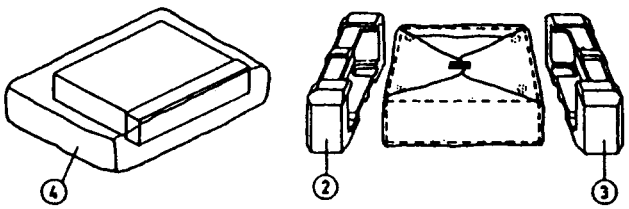
NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

ECHANISM-EXPLODED VIEW



REF.NO.	PART NO.	DESCRIPTION	REMARKS
2	24611607	Chassis B	
03-1	24611608	Head plate	NDM-177
03-2	24611609	Head plate	NDM-178
4	24601282	Main motor	
05-1	24606530	Control pc board	NDM-177
05-2	24606531	Control pc board	NDM-178
6	24611610	Clutch	NDM-177
6	24611611	Clutch	NDM-178
25	24602551	Main belt	
31	24602595	Pinch roller	
32	24602594	Pinch roller	
42	24602596	F/R belt	

PACKING VIEW



REF. NO.	PART NO.	DESCRIPTION
1	29052840Y	Carton box
2	29091637-1AY	Pad R
3	29091636-1AY	Pad L
4	29100034-1Y	650×850, Poly bag
	Accessary bag ass'y	
	2010244Y	Connection cord
	29342064Y	Instruction manual
	29365019B	Warranty card <N>
	29358002K	Service station list <N>
	29361784Y	Label UPC <N>
	29100097-1Y	320×250, Poly bag

NOTE: <N>:U.S.A. model only